

REMARKS

Claims 41-43 are amended, and claims 40-49 are pending in the application.

The Abstract is amended to remove the term "comprise" in response to an objection raised by the Examiner. Applicant believes that such amendment overcomes the Examiner's objection, and accordingly requests that such object be withdrawn in the Examiner's next action. The Examiner indicates that there is a problem with the drawings, and specifically indicates that there is no description of the label "106" utilized in Fig. 5. Applicant respectfully submits that the label "106" is described in paragraph 0052 on page 17 of Applicant's disclosure as pertaining to a topographical feature, and specifically as being a "step" in the Fig. 5 aspect of the invention. Accordingly, the Examiner is mistaken in contending that there is no description of the label "106", and Applicant therefore requests that the Examiner's contention that there is an error in the drawings for lack of description of "106" be withdrawn in the Examiner's next action.

The Examiner has numerous objections to the claims. The Examiner contends that the phrase "raising the temperature" utilized in claim 40 should be - - raising the **threshold** temperature - -. Applicant respectfully submits that the Examiner is mistaken. Claim 40 recites at line 8 that a mixture is initially provided within a reaction chamber at a temperature below the threshold temperature, and then subsequently claim 8 has the recited step of "raising the temperature" of line 10. The antecedent basis for the recited "raising the temperature" is in the recitation at line 8 of having the reaction chamber at "a temperature" below a recited threshold temperature. Accordingly, the claim 40 recited

phrase "raising the temperature" is supported by appropriate antecedent basis within the claim, and Applicant therefore requests that the Examiner's objection of such phrase as lacking appropriate antecedent basis be withdrawn in the Examiner's next action.

Referring next to claim 41, the Examiner contends that the recited phrase "form the layer on the substrate" lacks antecedent basis. Applicant thanks the Examiner for the careful reading of the claim, and has amended claim 41 to replace the recited phrase "the substrate to form the layer on the substrate" with the phrase - -within the at least one trench- -. The amendment to claim 41 is believed to overcome the Examiner's objection to such claim, and Applicant therefore requests that the Examiner's objection to claim 41 be withdrawn in the Examiner's next action.

Referring next to claim 42, the Examiner contends that the phrase "th precursor" and the phrase "and interfac" should be replaced with - -the precursor- - and - -an interface- -, respectively. Applicant has reviewed claim 42 and cannot find the problematic phrases "th precursor" and "and interface" that the Examiner is referring to. Applicant therefore respectfully submits that the Examiner is mistaken in indicating that claim 42 contains such non-sensical phrases, and accordingly requests that the Examiner's objection to claim 42 be withdrawn in the Examiner's next action.

Referring next to claim 43, the Examiner contends that the phrase "the surface composition" and the phrase "as the layer on the substrate" lack clear antecedent basis. Applicant has amended claim 43 to address the Examiner's objections. Specifically, Applicant has provided a phrase "a surface composition" within the claim to provide antecedent basis for the later recitation of "the surface composition", and Applicant has

replaced the recited phrase "as the layer on the substrate" with the phrase - -within the at least one trench- - which has antecedent basis in the base claim 40 from which claim 43 depends. Applicant therefore requests withdrawal of the Examiner's objection to claim 43 in the Examiner's next action.

Referring next to claim 44, the Examiner contends that a recitation of "the temperature of the mixture" should be replaced with a recitation of "the threshold temperature of the mixture". Applicant respectfully submits that the Examiner is mistaken. As discussed above with reference to claim 40, the base claim 40, from which claim 44 depends, provides antecedent basis for the phrase "the temperature". Further, it is clear from the context of claim 40 that the recited temperature can be below a threshold temperature, or at least the threshold temperature, in various aspects of the invention, and further that a threshold temperature is a specific temperature at which a precursor is reactive. Accordingly, the method of claim 40, and the method of claim 44, recite aspects in which a temperature within a reaction chamber is changed relative to a threshold temperature, and accordingly it would be improper to change the recited phrases of "the temperature of at least some of the mixture" in claim 40 and "the temperature of the mixture" in claim 44 to recite changes of a "threshold temperature". It is not the threshold temperature which is raised, but rather the temperature of a mixture is recited to be raised relative to such threshold temperature. Applicant therefore requests that the Examiner's objection to claim 44 be withdrawn in the Examiner's next action.

Claims 40-49 stand rejected as being unpatentable over Applicant's background of the invention (BOI) in view of Farrar (U.S. Patent No. 6,413,827). Applicant respectfully requests reconsideration of such rejections.

Referring first to claim 40, such recites that a semiconductor substrate is provided within a reaction chamber, with the substrate having at least one trench extending therein. The claim further recites that a mixture is provided within the chamber, and that such mixture comprises a precursor of an electrically insulative material within a supercritical fluid. The precursor is recited to be reactive at or above a threshold temperature to form the electrically insulative material. The mixture is recited to be initially provided within the reaction chamber at a temperature below the threshold temperature. Finally, the claim recites that the temperature of at least some of the mixture is raised to a temperature of at least the threshold temperature to form the electrically insulative material within the at least one trench.

A distinction between claim 40 and the Examiner's cited references is that claim 40 recites that a mixture comprising a precursor within a supercritical fluid is initially provided within a reaction chamber at a temperature below the recited threshold temperature of the precursor, and subsequently at least some of the mixture is raised to a temperature of at least the threshold temperature to form electrically insulative material within a trench. Neither of the Examiner's cited references suggests or discloses the claim 40 recited provision of a mixture comprising a precursor within a supercritical fluid at an initial temperature below a recited threshold temperature of the precursor, followed by the claim

40 recited raising of the temperature of at least some of the mixture to at least the threshold temperature to form electrically insulative material from the precursor.

Applicant's "Background of the Invention" shows that it was known in the art to dissolve precursor within supercritical fluid, but does not suggest that the claim 40 recited step of providing a mixture containing precursor within a supercritical fluid at an initial temperature below a recited threshold temperature of the precursor, and to then raise the temperature of at least some of the mixture to at least the threshold temperature to form electrically insulative material from the precursor. The Examiner's other cited reference of Farrar shows that it was known in the art to treat deposited materials with supercritical fluids to foam the materials (see, for example, col. 8, lines 12-27), but also does not suggest the claim 40 recited provision of a mixture having a precursor within a supercritical fluid at an initial temperature below a recited threshold temperature of the precursor, followed by raising of the temperature of at least some of the mixture to a temperature of at least the threshold temperature to form electrically insulative material from the precursor.

As neither of the Examiner's cited references suggests the claim 40 recited provision of a mixture containing precursor within a supercritical fluid at a temperature beneath a recited threshold temperature of the precursor, followed by raising of the temperature of at least some of the mixture to a temperature of at least the threshold temperature to form electrically insulative material from the precursor, it is inconceivable that the references could, in any combination, suggest such recited aspect of claim 40. For at least this reason, claim 40 is allowable over the cited references, and Applicant therefore requests such allowance in the Examiner's next action.

Claims 41-49 depend from claim 40, and are therefore allowable for at least the reasons discussed above regarding claim 40.

Claims 40-49 are allowable for the reasons discussed above, and Applicant therefore requests that the Examiner's next action be a Notice of Allowance.

Respectfully submitted,

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By: _____

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